**Name: Date: Period:**

**DNA Unit: DNA Webquest**

**Part 1 – History, DNA Structure, DNA Replication**

**DNA History**

http://www.dnaftb.org/dnaftb/1/concept/index.html

Read the text and answer the following questions.

1. What have people wondered since the beginning of human history? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Who discovered that individual traits are passed on from one generation to the next? In what

year?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**On the menu at the right click on number 15 “DNA & proteins are key ….”**

3. When was DNA discovered as a major chemical of the nucleus of cells? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. In the early 1900s what molecule was considered to be a better candidate to transmit hereditary information

from one generation to the next? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. Why was protein considered to be a better candidate as the hereditary molecule than DNA?

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**On the menu at the right click on number 16 “one gene makes one protein”**

6. What was the conclusion make by Beadle & Tatum? What year was this?

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**On the menu at the right click on number 17 “a gene is made of DNA”**

7. What did Oswald Avery’s team of scientists conclude from their experiments? In what years?

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**On the menu at the right click on number 19 “The DNA is shaped like a twisted ladder”**

8. What did earlier work on DNA show?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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9. Who won the race to show the 3-dimensional structure of DNA? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. What year was this? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Click on animation at the bottom of your screen (step through the animation and answer the following**

**questions**

11. What makes up a nucleotide? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. How could DNA be an “intelligent molecule” (carry hereditary information)?

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13. What was Erwin Chargaff’s contribution to the DNA puzzle?

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14. What important tool did Linus Pauling use to determine the structure (shape) of proteins?

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15 How was this tool used to help discover the shape of DNA?

16. Name the two scientists that made the x-ray diffraction patterns that Watson & Crick used?

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17. The distinctive “X” meant the DNA had what pattern? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Go to the DNAi website: http://www.dnai.org/a/index.html**

Click on “Finding the Structure” at the bottom of the page, then click on “putting it together” at the top

of the new page. Click on the picture next to “base pairing interactive”. Go through the steps to

determine how the nitrogen bases pair, and how the sugar phosphate backbone is formed. Draw your

results below using the diagram at the end of the module.

**DNA Replication**

Go to http://www.stolaf.edu/people/giannini/flashanimat/molgenetics/dna-rna2.swf

Answer the following questions as you move through the animation of DNA replication.

**Before clicking**

1. What class of proteins are the molecules with –ase endings? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Draw a portion of the DNA molecule on the screen.

**Click on the large arrow once. (total of one click)**

3. Draw the portion of DNA that has “unzipped”

**More DNA Replication**

**Click on the large arrow again (total of 2 clicks).**

4. What begins to happen on one of the “unzipped” strands?

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**Click several more times slowly and study what happens.**

4. What do you think the molecules are with the –ase endings on them?

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5. Can you hypothesize what function they could have in this process?

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6. Explain in your own words & draw a diagram of the process of DNA replication

(include what you start and end with & what happens in between)

Explanation

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**Go to the DNAi website: http://www.dnai.org/a/index.html**

Click on “Copying the Code” at the bottom of the page, then click on “putting it together” at the top of

the new page. Select “replication”. Watch the animation

1. What is the job of the blue helicase enzyme? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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2. How fast does it unwind DNA? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_